

**Montana Board of Oil and Gas Conservation
Environmental Assessment**

Operator: Continental Resources, Inc.

Well Name/Number: Osborne 1-34H

Location: SE SW Section 34 T27N R56E

County: Richland, **MT; Field (or Wildcat)** W/C (Bakken Formation Horizontal)

Air Quality

(possible concerns)

Long drilling time: No, 30 to 40 days drilling time.

Unusually deep drilling (high horsepower rig): No, triple derrick drilling rig to drill a single lateral Bakken formation horizontal well, 19,990' MD/10,002' TVD.

Possible H₂S gas production: Slight chance H₂S gas production from Mississippian Formations.

In/near Class I air quality area: Yes nearest Class I air quality area is the Fort Peck Indian Reservation, about 9.25 miles to the northwest from this well location.

Air quality permit for flaring/venting (if productive): Yes, DEQ air quality permit required under 75-2-211

Mitigation:

☒ Air quality permit (AQB review)

☐ Gas plants/pipelines available for sour gas

☐ Special equipment/procedures requirements

☐ Other: _____

Comments: No special concerns – using triple derrick rig to drill a single lateral Bakken formation horizontal well, 19,990' MD/10,002' TVD. If there are existing pipeline for gas in the area then gas must be tied into system or if no gathering system nearby gas can be flared under Board Rule 36.22.1220.

Water Quality

(possible concerns)

Salt/oil based mud: Yes, oil based invert mud system on mainhole and saltwater for the horizontal lateral hole. Surface casing hole will be drilled with freshwater and freshwater mud system.

High water table: Possible high water table in the area of review.

Surface drainage leads to live water: No, closest drainage is Elm Coulee, an ephemeral tributary drainage to Day Creek, adjacent to the north edge of this location. The Missouri River is about 5 miles to the north from this location.

Water well contamination: No, closest water wells nearby are about 1/2 of a mile to the east, about 5/8 of a mile to the southwest, about 3/4 of a mile to the northeast and about 7/8 of a mile to the from this location. Domestic and stock water well depths range from 51' to 297'. Surface casing will be drilled with freshwater, steel casing will be set and cement to surface from 1660'.

Porous/permeable soils: No, sandy clay soils.

Class I stream drainage: Closest Class I stream drainages in the area of review is the Missouri River.

Mitigation:

☐ Lined reserve pit

☒ Adequate surface casing

☒ Berms/dykes, re-routed drainage on northside of location.

☒ Closed mud system
☒ Off-site disposal of solids/**liquids (in approved facility)**
☒ Other: Closed loop mud system with a lined cuttings disposal pit.

Comments: 1660' of surface casing cemented to surface adequate to protect freshwater zones and will cover the Base of the Fox Hills Formation.

Soils/Vegetation/Land Use

(possible concerns)

Stream crossings: No, stream crossings anticipated. Crossing only ephemeral drainages.

High erosion potential: No high erosion potential, small cut, up to 4.8' and small fill, up to 3.4' required.

Loss of soil productivity: No, location will be restored after drilling, if nonproductive. If productive unused portion of drillsite will be reclaimed.

Unusually large wellsite: No, very large single wellsite, 500'X300' location size required.

Damage to improvements: No, surface use is cultivated land.

Conflict with existing land use/values: Slight

Mitigation

- ☐ Avoid improvements (topographic tolerance)
- ☐ Exception location requested
- ☒ Stockpile topsoil
- ☐ Stream Crossing Permit (other agency review)
- ☒ Reclaim unused part of wellsite if productive
- ☐ Special construction methods to enhance reclamation
- ☐ Other _____

Comments: Will use existing State Highway, #16 and county road #146. About 3,613' of new access road will be built into this location from county road #146. A closed loop mud system will be utilized in the drilling of this well. Drill cutting will be disposed of in a lined cuttings pit on the well location. Oil based drilling fluids will be recycled. Pit fluids will be recycled and/or haul to a commercial SWD disposal. Lined cuttings pit will be backfilled when dry. No special concerns.

Health Hazards/Noise

(possible concerns)

Proximity to public facilities/residences: Closest residences are about 1/2 of a mile to the east and 5/8 of a mile to the south southwest from this location. The town of Culbertson, Montana is about 7.25 miles to the north northwest from this location.

Possibility of H2S: Slight chance of H2S (Mississippian Formations).

Size of rig/length of drilling time: Triple drilling rig/short 30 to 40 days drilling time.

Mitigation:

- ☒ Proper BOP equipment
- ☐ Topographic sound barriers
- ☐ H2S contingency and/or evacuation plan
- ☐ Special equipment/procedures requirements
- ☐ Other: _____

Comments: Adequate surface casing cemented to surface with a working BOP stack should mitigate any problems. (5,000psig annular, pipe and blind rams) equipment (Rule 36.22.1014) to prevent well control problems. Sufficient distance between location and buildings noise should not be a problem.

Wildlife/recreation

(possible concerns)

Proximity to sensitive wildlife areas (DFWP identified): None identified.

Proximity to recreation sites: None identified.

Creation of new access to wildlife habitat: No

Conflict with game range/refuge management: No

Threatened or endangered Species: Species identified as threatened by the USFWS are Pallid Sturgeon, Interior Lease Tern, Piping Plover and Whooping Crane. Species listed as candidate species are the Greater Sage Grouse and Sprague's Pipit. NH tracker website for this Township and Range lists seven (7) species of concern. They are the Townsend's Big-eared Bat, Eastern Red Bat, Great Blue Heron, Piping Plover, Black-bill Cuckoo, Whooping Crane and Least Tern.

Mitigation:

 Avoidance (topographic tolerance/exception)

 X Other agency review (DFWP, federal agencies, DSL)

 Screening/fencing of pits, drillsite

 Other: _____

Comments: Private cultivated surface lands at this surface location. There maybe species of concern that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to what he would like done, if a species of concern is discovered at this location. The Board of Oil & Gas has no jurisdiction over private surface lands.

Historical/Cultural/Paleontological

(possible concerns)

Proximity to known sites None identified.

Mitigation

 avoidance (topographic tolerance, location exception)

 other agency review (SHPO, DSL, federal agencies)

 Other: _____

Comments: Private cultivated surface lands at this surface location. There maybe possible historical/cultural/paleontological sites that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to his desires to preserve these sites or not, if they are found during construction of the wellsite. The Board of Oil & Gas has no jurisdiction over private surface lands.

Social/Economic

(possible concerns)

 Substantial effect on tax base

 Create demand for new governmental services

 Population increase or relocation

Comments: Wildcat well. No concerns

Remarks or Special Concerns for this site

Well is a single lateral Bakken formation horizontal well, 19,990'MD/10,002'TVD.

Summary: Evaluation of Impacts and Cumulative effects

No long term impact expected, some short term impacts will occur.

I conclude that the approval of the subject Notice of Intent to Drill (does/**does not**) constitute a major action of state government significantly affecting the quality of the human environment, and (does/**does not**) require the preparation of an environmental impact statement.

Prepared by (BOGC): /s/Steven Sasaki
(title:) Chief Field Inspector
Date: August 13, 2012

Other Persons Contacted:

Montana Bureau of Mines and Geology, GWIC website

(Name and Agency)
Richland County water wells
(subject discussed)
August 13, 2012
(date)

US Fish and Wildlife, Region 6 website
(Name and Agency)
ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES
MONTANA COUNTIES, Richland County
(subject discussed)

August 13, 2012
(date)

Montana Natural Heritage Program Website (FWP)
(Name and Agency)
Heritage State Rank= S1, S2, S3, T27N R56E
(subject discussed)

August 13, 2012
(date)

If location was inspected before permit approval:
Inspection date: _____
Inspector: _____

Others present during inspection: _____